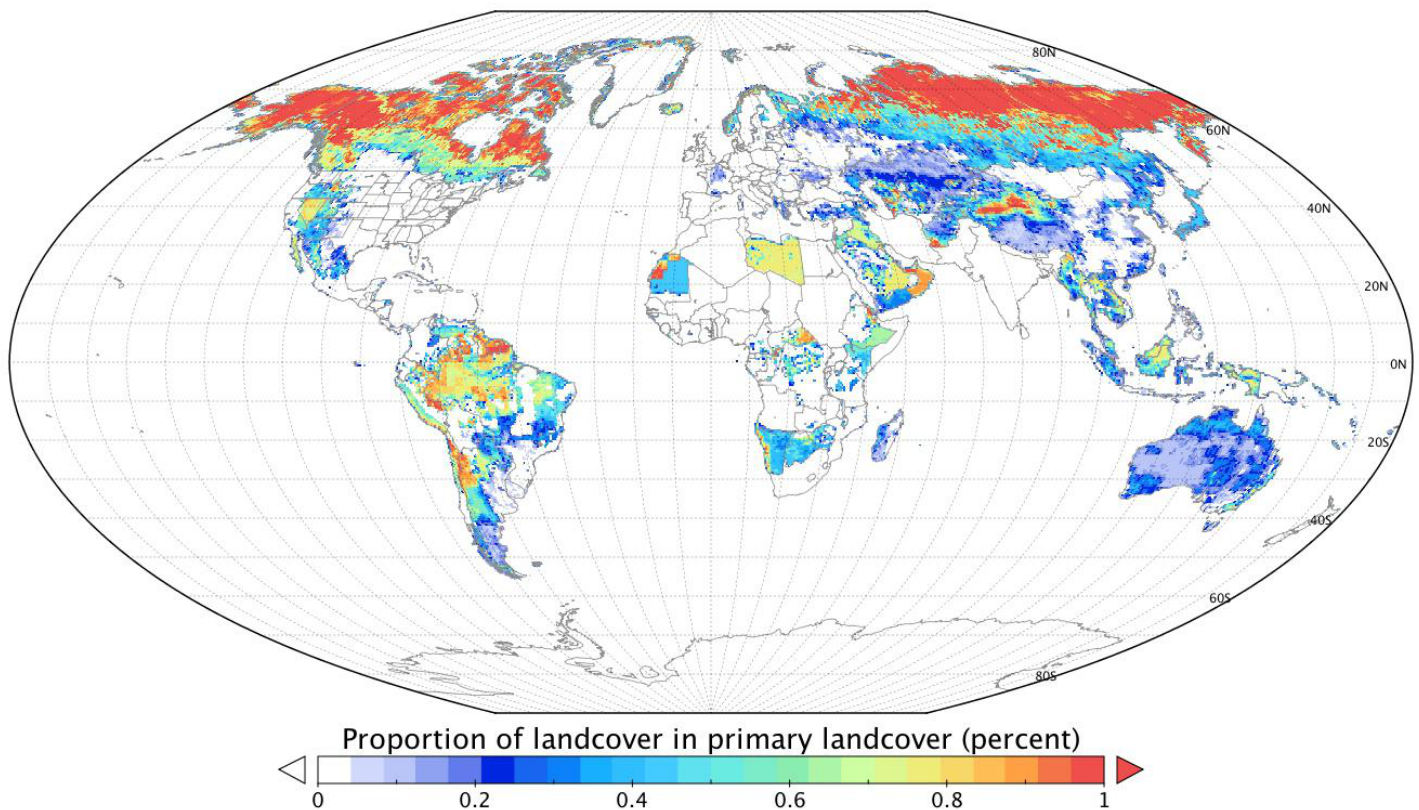


## My NASA Data - Mini Lesson/Activity

### Comparing Global Land Use Over Time

Year 2100



## Student Directions

### Background

**Primary land cover** is natural vegetation that has never been disturbed by human activities such as agriculture or wood harvesting.

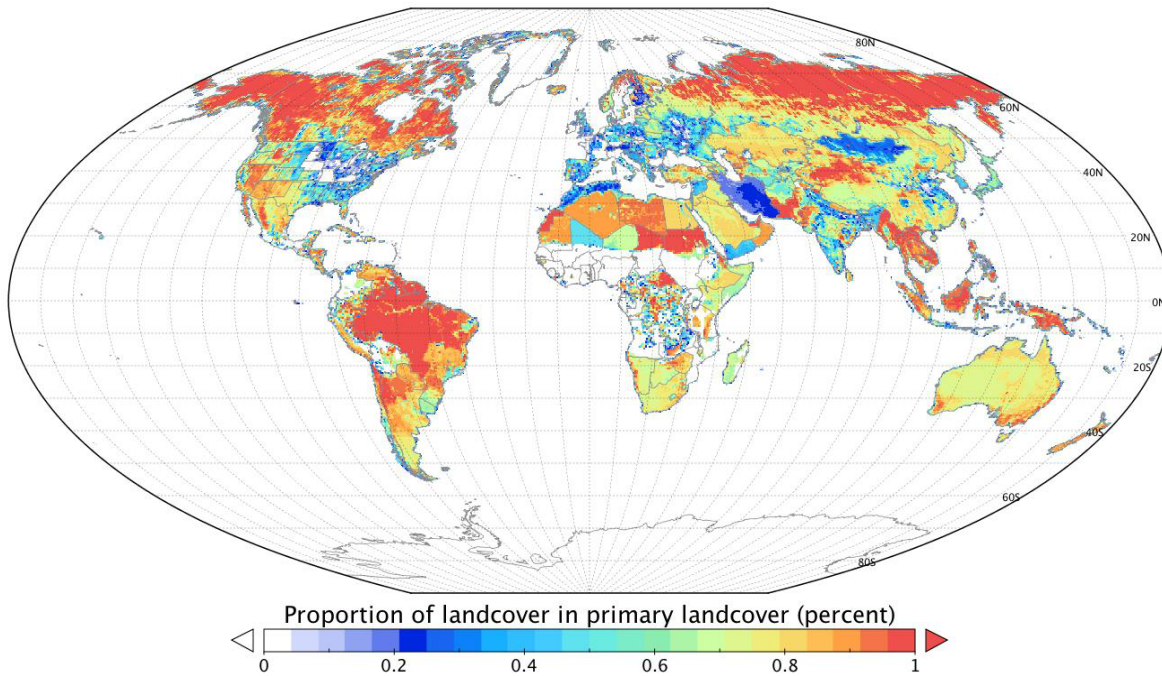
**Secondary land cover** is also natural vegetation that is recovering from human activities. It can be very young or as mature as primary land cover. Even if it is mature, it is not considered primary because it has been disturbed and has recovered.

The images below represent the percent of land cover which is considered to be primary land

cover for the years 1900 and 2100 at a spatial resolution of approximately 50 km. The data for 1900 are historical. The data for 2100 are projections from 2006-2100 using four Integrated Assessment Model (IAM) scenarios with respect to changes in Earth's energy budget.

## Steps

Year 1900



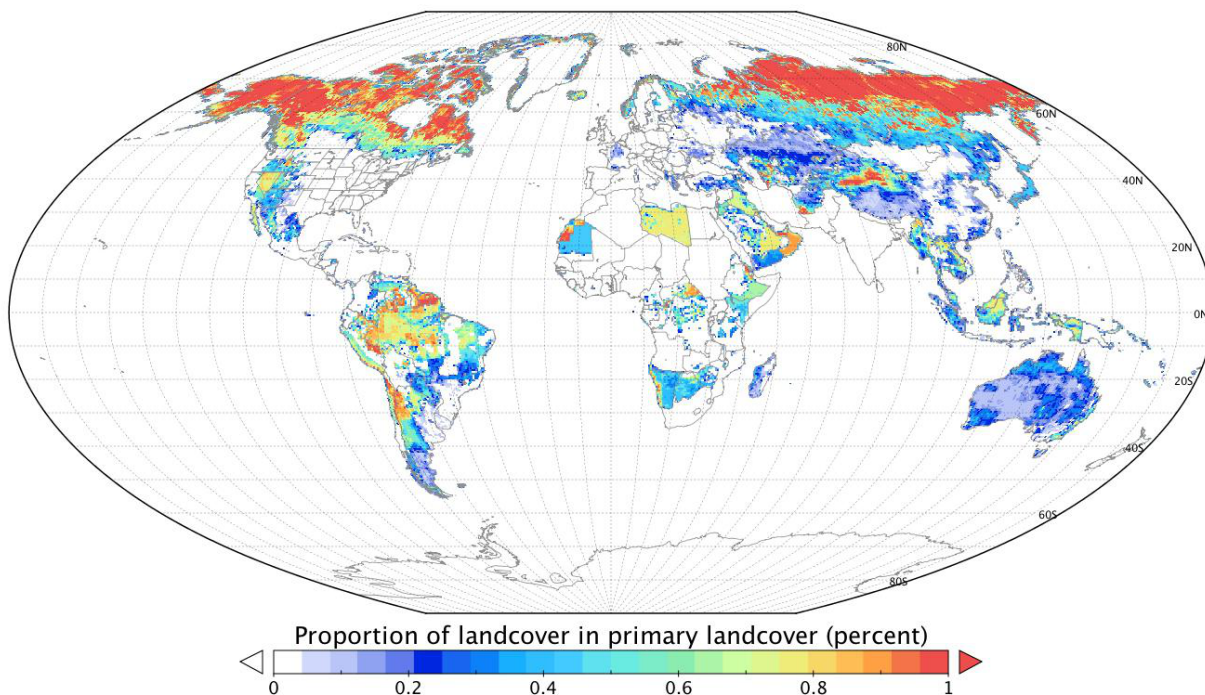
Proportion of

landcover in primary landcover in year 1900

Image Credit: NASA Oak Ridge National Laboratory DAAC

<https://mydasdata.larc.nasa.gov/sites/default/files/inline-images/1900.png>

Year 2100



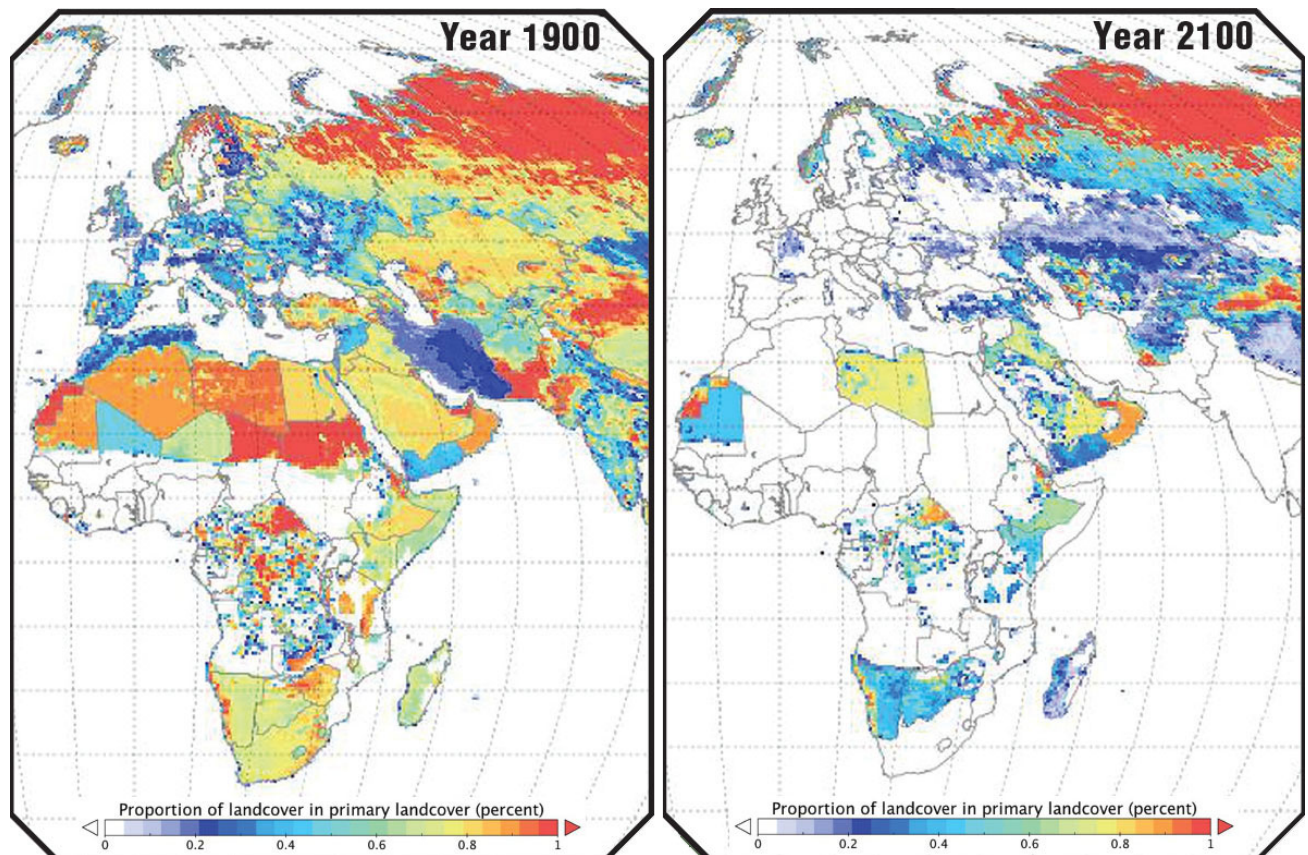


Proportion of  
landcover projected to be primary landcover in year 2100 under a medium-high emission pathway by  
the AIM model

Image Credit: NASA Oak Ridge National Laboratory DAAC

<https://mydasdata.larc.nasa.gov/sites/default/files/inline-images/2100.png>

1. Examine the images to see the projected differences between 1900 and 2100 and answer the questions. Check with your instructor on how to submit answers.
  1. What differences do you see?
  2. Which color shows the highest primary land cover percentage? Lowest?
  3. Describe where you would expect to find the highest percentage of primary land cover in 2100. Lowest?



Proportion of landcover in primary landcover (percent) for 1900 and projected for 2100

Image Credit: NASA Oak Ridge National Laboratory DAAC

[https://mydasdata.larc.nasa.gov/sites/default/files/inline-images/primary%20land%20cover\\_0.jpg](https://mydasdata.larc.nasa.gov/sites/default/files/inline-images/primary%20land%20cover_0.jpg)

2. Examine the images of Africa and answer the questions to write a caption for the images of Africa.
  1. What do you observe in Africa for 1900?
  2. What do you observe in Africa for 2100?
  3. What are the differences?
  4. What do these differences signify?
  5. Write the caption.

## Sources

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1. Images: NASA Oak Ridge National Laboratory DAAC
  2. Data: Chini, L.P., G.C. Hurtt, and S. Frolking. 2014. Harmonized Global Land Use for Years 1500 – 2100, V1. Data set. Available on-line [<http://daac.ornl.gov>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA. <http://dx.doi.org/10.3334/ORNLDAAC/1248>
  3. "Land Cover and Land Use Change Information." NASA, NASA, 25 Apr. 2022, <https://earthdata.nasa.gov/user-resources/lcluc-information>.

Teachers, these mini lessons/student activities are perfect "warm up" tasks that can be used as a hook, bellringer, exit slip, etc. They take less than a class period to complete. Learn more on the "[My NASA Data What are Mini Lessons?](#)" page.

Teachers who are interested in receiving the answer key, please complete the [Teacher Key Request and Verification Form](#). We verify that requestors are teachers prior to sending access to the answer keys as we've had many students try to pass as teachers to gain access.